

# Advanced Operations Management

Fall 2006, Professor Eckstein

## Homework 6

Due Thursday, November 1

Show your work for all problems. If you solve the problem via a spreadsheet, hand in two printouts of your spreadsheet, one showing the cell values and the other showing the cell formulas. Include gridlines and row/column headings in both printouts. In Excel, the gridline and row/column heading options may be found by selecting **File**→**Page Setup**..., and clicking on the **Sheet** tab. To display cell formulas, press **Ctrl** and **~** on your keyboard simultaneously; press the same keys again to go back to displaying cell values.

1. Assume that demand for a product is well-modeled by a Poisson process with an average of 600 events per year. The overhead cost of placing an order is \$700, and the lead time between placing and receiving an order is one month ( $= 1/12$  year). Your holding cost is \$12 per unit per year, and you estimate the cost of having to backorder demand to be \$40 per unit. Use the stochastic EOQ approximation method discussed in class to estimate the best order amount and reorder point.
2. Assume that demand for a product is well-modeled by a Poisson process with an average of 3600 events per year (just under 10 sales per day). It costs you \$100 to place an order, your inventory cost is \$5 per unit per year, and you estimate the cost of backordering demand to be \$10 per unit. The lead time between placing and receiving an order is random, with the following probability distribution:

<b>Days</b>	<b>Probability</b>
2	10%
3	20%
4	30%
5	20%
6	20%

You may treat one day as being equal to  $1/365$  of a year. Use the stochastic EOQ approximation method discussed in class to estimate the best order amount and reorder point.

3. Problem 1 on page 225 of the text.
4. Problem 2 on pages 225-226 of the text.